

The Antarctic Palaeo-Pacific Margin of Eastern Gondwana: a Northern Victoria Land Perspective

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Subduction-accretion processes driven by westward-directed subduction of a proto-Pacific plate beneath the East Antarctic margin of Gondwana led, in late Neoproterozoic-Early Palaeozoic times, to the development of the Ross Orogen.

In northern Victoria Land a major suture bounds the inboard low- to high-Temperature Wilson "Terrane", corresponding to the activated East Antarctic palaeo-margin, against two outboard low- to very-low grade terranes including remnants of a primitive island arc (Bowers Terrane) and thick turbidite sequences of Cambrian-Ordovician age (Robertson Bay Terrane). The Wilson "Terrane" can be subdivided into an inner, broad, low Pressure - high Temperature belt with low cooling rates after a stage of moderate crustal thickening and hosting subduction-related (530-480 Ma) granitoids, and an outer narrow and discontinuous belt consisting of three main tectonic slivers, characterized by high cooling rates and composed by medium- to high-Pressure (up to eclogite facies) rocks, some of them derived from Neoproterozoic mafic protholiths with variable geochemical affinity including prevailing transitional- to E-type MORB-type geochemical signatures. The final amalgamation of the two belts and the tectonic coupling with the outboard Bowers Terrane was locally accompanied by the emplacement of syn- to late-kinematic granitoids of likely continental arc affinity and occurred under low Pressure amphibolite facies conditions and a prevailing trans-pressure regime.

Overall the petrological and geological records in the NVL segment of the Ross Orogen may be comprehensively interpreted in terms of a Cordilleran-type magmatic arc + accretionary wedge system recording several stages of the thermo-tectonic reworking of the palaeo-Pacific margin, from the early subduction phase, to a complex collision/accretion phase of strike-slip to contractional tectonics which determined strong telescoping and suturing of the two outboard terranes and differential tectonic denudation of the inboard Wilson "Terrane" metamorphic belts.